DOCUMENT RESUME

ED 329 378 RC 017 674

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TITLE Linkages between USDA-CSRS and the 1890 Institutions.
PUB DATE 5 Feb 90
NOTE 13p.; Paper presented at the Annual Meeting of the Southern Rural Sociological Association (Little Rock, AR, February 5, 1990).
PUB TYPE Speeches/Conference Papers (150) -- Reports - Descriptive (141)

EDRS PRICE MF01/PC01 Plus Postage.
DESCRIPTORS *Agricultural Education; *Black Colleges; Engineering Education; *Federal Aid; *Government School Relationship; Higher Education; High Schools; Institutional Cooperation; *Land Grant Universities; *Science Education
IDENTIFIERS *Department of Agriculture

ABSTRACT

The percentage of young Americans preparing for careers in science and engineering has been declining steadily since the early 1980s. The agricultural community has raised questions about the future availability of an adequate supply of scientists. The 1890 historically black land grant institutions should play an important role in supplying minorities to help meet this critical need. The U.S. Department of Agriculture is working with the 1890 institutions and Tuskegee University to meet this human capital need through: (1) grants for acquisition and improvement of research facilities and equipment; (2) the USDA Research Apprenticeship Program for Minority High School Students; (3) Higher Education Strengthening Grants to increase institutional capacities to meet educational needs in the food and agricultural sciences; (4) Morrill-Nelson funds for faculty salaries, teaching equipment, program development, and other operating expenses of higher education in the food and agricultural sciences; (5) Evans-Allen funds administered by the Cooperative State Research Service to enhance administrative infrastructures at 1890 land grant institutions for agricultural research purposes; (6) formula-funded extension programs at 1890 institutions and Tuskegee University; (7) National Agricultural Library services; (8) Agricultural Research Service activities aimed at developing cooperation among research projects; and (9) an April 1988 symposium to enhance communication between 1890 institutions and USDA agencies. Of the 17 recommendations of this conference, 3 have been implemented: USDA office and liaison officer on each campus, USDA summer employment programs for students of 1890 institutions, and the 1890 Institutions Capacity Building Program. (SV)

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ED329378

Linkages Between USDA - CSRS and the 1890 Institutions

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SOUTHERN RURAL SOCIOLOGICAL ASSOCIATION

ANNUAL MEETING

FEBRUARY 5, 1990

CAPTIAL HOTEL

LITTLE ROCK, ARKANSAS

RC017674

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1890 Institutions and the USDA

At a time when the United States seeks fresh triumphs in the Nation's technology - a technology whose bright promise has become tarnished - the need for a new and closer working partnership between the Federal Government and the Nation's universities is more compelling than ever.

The universities, which supply the manpower to run the research and Extension enterprise and most of the new knowledge that fuels it, are the logical foundation for an effort to refurbish America's scientific and technological skills. Time and again, the Federal Government has turned to higher education to meet and deal with pressing National emergencies, and the combination of Federal assistance and university resources has served the Nation well. It can continue to do so.

The Nation's colleges and universities have been clearly recognized by both the legislative and executive branches of the Federal Government as essential National resources. Implicit in the aid currently directed by the Federal Government to programs involving institutions of higher education is the recognition that all of our serious economic, social and technological problems - the energy crisis, the world food crisis, even National defense - are dependent for their solution on a sound, healthy system of higher education. Many important Federal objectives have been met by colleges and universities, and it is clear that the institutions themselves have benefited from these collaborative efforts.

The **Task Force on Women, Minorities, and the Handicapped in Science and Technology** was established by the U.S. Congress in Public Law 99-383, Section 8, to report to the President, the Head of each participating Federal Agency, and the Congress. The Task Force made its Interim Report, September 1988. The report is entitled, **"Changing America: The New Face of Science and Engineering."**

Science and engineering workers are vital to our advanced industrial society. But, by the year 2010, we could suffer a shortfall of as many as 560,000 science and engineering professionals. As a result, America's economic strength, security, and quality of life are threatened.

The percentage of young Americans preparing for careers in science and engineering has been declining steadily. Our most experienced scientists and engineers, recruited after Sputnik, will be retiring in the 1990s. Meanwhile, by the year 2000, the number of jobs requiring college degree will increase dramatically. The educational pipeline - from prekindergarten through the Ph.D - is failing to produce the scientifically literate and mathematically capable workers needed to meet future demand.

America is changing, particularly in the composition of its young. Blacks and Hispanics are now 25 percent of our schoolchildren; by the year 2000, they will be 47 percent. This change has already occurred in some regions such as California, New Mexico and Texas.

Thus, today America is a different country demographically from the one that produced earlier science and engineering feats. By the mid-1990s, there will be fewer young people to enter the workforce, and these scarce young workers will have to be highly productive to keep our economy growing and maintain our standard of living. This means they will have to be versatile and well-educated, and if we are to continue as an advanced industrial society and world leader, many must join the science and engineering professions.

Since the early 1980s, the proportion of U.S. freshmen choosing science and engineering majors in college has been gradually falling. The drop has been little noticed because many foreign students have been making up total enrollments with older and part-time students who tend not to graduate in science and engineering. If these trends persist, America will graduate fewer U.S. bachelor degree holders and, subsequently, even fewer Ph.Ds in science and engineering.

To quote from the report: "We must find ways to bring many more young people - particularly those from under-represented groups - into engineering and science. They must receive sound mathematics and science instruction in school, aspire to college, qualify for these majors at college, and complete their degrees. More baccalaureates must stay on as graduate students, as postdoctorals, and as teachers of future science and engineering students. Changing the mathematics and science interest and achievement of a generation of students is a huge task. It requires changing America."

The Task Force stated: "We should commit to the task of producing a world-class science and engineering workforce not only because science and technology happen to be the coin of international power.

We should take action not just because Japanese students score higher in international tests. We should take action not only because the opportunity costs of not acting - school dropouts, welfare, and prisons, for example - are staggering. We have two other powerful reasons.

One: Every American citizen, regardless of background, gender, physical disability or race, should receive the educational and economic opportunity to develop to his or her fullest potential.

Two: We should extend these rights, not only in the name of social justice, but as a test of a modern, well-functioning society. This is the standard by which we should continue to stand and be measured."

The agricultural community has raised questions regarding the future availability of an adequate supply of scientists. The 1890 Institutions should play an important role in supplying minorities into the pipeline to help meet this critical need.

The USDA is dedicated to working with the 1890 Institutions and Tuskegee University in meeting this human capital need.

Some of the activities we have been engaged in with you are supportive:

Research Facilities-

Public Law 97-98, Section 1433, authorized the Secretary of Agriculture to award grants to the 1890 Institutions and Tuskegee University to acquire and improve research facilities and equipment so that eligible institutions could fully participate with the State Agricultural Experiment Stations in a balanced attack on the research needs of the people of their States.

The Congress appropriated $10,000,000 for each fiscal year ending September 30, 1983, September 30, 1984, and September 30, 1985. Because of Gramm-Rudman budget reductions, the Congress appropriated $9,508,000 in fiscal years 1986 and 1987. The program was authorized for five years; therefore, 1987 was the last year of the program.

These funds have enabled the 1890 Institutions to renovate or construct needed facilities and to purchase equipment and land, so that the total research program is strengthened. These facilities will attract outstanding faculty members and students.

Extension Facilities-

The Congress has appropriated and we in Science and Education are administering funds for 1890 Extension facilities. This will help you to better achieve your program goals.

USDA Research Apprenticeship Program
for Minority High School Students-

The U.S. Department of Agriculture instituted the Research Apprenticeship Program for minority high school youth for the first time in the summer of 1980.

Purpose of Program

The main purpose of the program is to stimulate interest in careers in science and engineering among racial and ethnic minorities through the establishment of working relationships between high school students and active researchers in university and Federal facilities. For a summer's work, apprentices receive stipends roughly equivalent to what would be earned at the minimum wage. The program recruits high school students in the upper 1/3 of the class.

Need for Program

Racial and ethnic minorities are under-represented in the food and agricultural sciences, as in other scientific fields. Very few of the science-oriented minority high school students select the food and agricultural sciences as either a college major or as a projected career choice.

Auspices

The Research Apprenticeship Program was developed by the White House, together with the Office of Management and Budget and the Office of Science and Technology Policy. Program sponsors within USDA include the Agricultural Research Service (ARS) and the Cooperative State Research Service (CSRS).

Size of Program

Currently, CSRS and ARS each is funding the program at the level of $250,000. Therefore, each agency funds 100 students at $2,500 for the summer program. CSRS funds are distributed to our client institutions based on acceptable applications for participation in the program. ARS distributes funds to its scientists throughout all of its regions. Approximately 67 Land-Grant Institutions are participating in the program. The 1890 Institutions have participated in the program each year, and they have all stressed the importance of the program.

Strengthening Grants-

Higher Education-Strengthening Grants, pursuant to Section 1417 (a)(2)(A) of the National Agricultural Research Extension, and Teaching Policy Act of 1977, as amended, support resident instruction programs at historically black Land-Grant Institutions and Tuskegee University. Initiated in fiscal year 1985, the 1890 land-grant institutions, including Tuskegee University and the University of the District of Columbia, are eligible for an equal share of the total funds available for the grants program. In fiscal year 1989, $1,844,940 or approximately $102,497 per institution is available.

Grants were awarded to eligible recipients for the purpose of strengthening institutional capacities to respond to State, National, or international educational needs in the food and agricultural sciences. Specific program areas targeted for strengthening assistance in fiscal year 1989 were:

1) curriculum development,
2) faculty development,
3) library resources enhancement,
4) instructional equipment, and
5) student recruitment and retention.

Morrill-Nelson Funds-

Morrill-Nelson funds supported faculty salaries, teaching equipment, program development and other operating expenses. Administrative units having access to and reporting use of the monies to strengthen higher education in the food and agricultural sciences include agriculture, home economics, forestry and veterinary medicine

Evans-Allen Funds- (CSRS)

A formula funded research program for the 1890 Colleges and Tuskegee University was established in the Food and Agriculture Act of 1977. Section 1445 of P.L. 95-113 authorized annual appropriations to support continuing agricultural research at the 1890 Colleges and Tuskegee University and funds were appropriated beginning in Fiscal Year 1979.

Program funds under Evans-Allen have been used to enhance the administrative infrastructures at the 1890 Land-Grant Colleges for agricultural research purposes.

Flexibility has been allowed in the use of the funds to hire personnel in business offices and research administration offices for the establishment of an administrative structure which fosters improved research management from the fiscal and program aspects.

It is very important to the USDA that CSRS-administered funds have had a profound impact on the basic structure of these institutions. The funding has made it possible to hire more faculty members, provide assistance to students, and improve physical structures.

Extension at 1890 and Tuskegee University

Section 1444 of the National Agricultural Research, Extension and Teaching Policy Act of 1977. (Formula Funded - Extension program).

This program is funded annually and provides your institutions funds to participate in local and national issues.

Widespread national issues receiving priority attention today include: Environmental quality, soil, water, air pollution; the effective and safe use of pesticides and chemicals and pest management; disadvantaged, low-income people; the alienated and minority groups who are outside the mainstream of society; the malnutrition and health of our population; drug use and abuse by our youth; housing and transportation problems... All of these and others need our attention and assistance. At the same time consideration must be given to maintaining our primary responsibility of helping to assure a strong, viable agricultural industry which will benefit both the producer and the consumer.

We at the national level and you within your state, will need to greatly expand our efforts in more rapidly providing economic outlook information and in helping those in agriculture understand and consider policy issues which affect their businesses.

The impact of world markets and a free economy directly affects the cost of production and marketing and the incomes of those engaged in agriculture. These concerns, coupled with consumer concerns about the relatively high cost of food processing make the educational role of the 1890 Institution quite challenging and complex. In short, we need to emphasize economic literacy.

National Agricultural Library (NAL)

Through meetings, notices, and telephone conversations, NAL continues providing guidance and counseling to library directors of 1890 institutions on the following:

1. solving agricultural information needs on their campuses;

2. using NAL and its services more effectively;

3. working with agricultural researchers and teachers;

4. developing appropriate projects to aid them in introducing new agricultural information services; and

5. assisting them in finding funds.

Agriculture Research Service

ARS has been involved with the 1890 Institutions over the years. Some of the current activities are:

- ARS has made funds available for support of research projects at the 1890 Land Grant Institutions.

- A team of ARS scientists visited each 1890 Land Grant to identify opportunities for cooperation and collaboration on research projects. Consideration was given to funding of cooperative research; exchange of scientists; sharing of equipment or technology; and consulation and technology exchange.

- Funds are provided to establish research associate positions at the Land Grant Institutions to conduct on-site research of mutual interest to ARS and the institutions.

- ARS scientists participate in lecture series at several 1890 Land Grant Institutions.

- Contacts are made with all of the Land Grant Institutions to recruit individuals for cooperative education and scientific positions.

- Special outreach programs are conducted with two of the 1890 Land Grant Institutions. The primary objective of each program is to stimulate interest in agricultural and life science careers among high school students.

- ARS will recruit solely from the 1890 Land Grants Institutions for 50 students to participate in the summer employment program in 1989.

USDA/1890 INITIATIVE

A symposium sponsored by the U.S. Department of Agriculture (USDA), the 1890 Historically Black Land Grant Institutions and Tuskegee University, and was hosted by Tennessee State University was held April 24-26, 1988 in Nashville. The goal of this symposium was to enhance communication between the 1890 institutions and Tuskegee University, and USDA agencies to develop active partnerships in support of the agricultural enterprise.

The symposium was attended by top USDA agency heads as well as deans and presidents of Historically Black Land Grant Institutions. Work groups discussed specific issues related to attracting more minority students into agriculture and strengthening links between the 1890 Institutions and USDA. Specific action items were recommended by each work group.

Former Deputy Secretary Peter Myers responded within one week of his return to Washington, D.C. by implementing a key symposium recommendation. He established a task force consisting of several presidents of the Historically Black Land Grant Institutions and career agency heads to assist in carrying forth symposium recommendations.

RECOMMENDATIONS

1. Establish a joint USDA/1890 Task Force

2. Establish USDA office on each 1890 campus with at least one person (liaison position)

3. All USDA agencies should be encourage to co-locate programs, facilities and support mechanisms on 1890 institutions.

4. The pool of human resource should be exchanged between USDA and 1890's

5. Establish financial assistance program to help minorities thru college

6. Develop a communication/marketing plan to get more minorities into agriculture, home economics and forestry.

7. Develop a K-12 Career Awareness Initiative Program in Food & Agricultural Science

8. Develop a marketing program for careers in agricultural and home economics and for educational opportunities at the 1890 Land Grant Institution.

9. Develop an Adopt-A-School Program with special attention to the Agriculture High School.

10. USDA need to increase the funding level to the 1890's.

11. Steps must be taken toward insuring equity in funding level to the 1890's.

12. Current funding to the 1890's must be enchanced by providing "set-aside" funds.

13. USDA provide funds and professional support to establish "Cooperative Targeted Programs in Food, Agriculture, and Forestry Programs at 1890's".

14. Prepare a Report of symposium and present it to Secretary of Agriculture and the appropriate State & National Legislature.

15. Representative of 1890's should be included on all relevant Boards, Councils and Commission of Agriculture.

16. Communication between USDA and 1890's should be facilitated by the development and dissemination of directories, describing the location and telephone contact information for key personnel.

17. The Report prepared in 1980 by the Presidents of 1890's entitled "Strengthening 1890's should be reviewed.

Several of these recommendations have been implemented. Chief among these are :

A. USDA Office and Liaison Officer on each campus.

This recommendation has been fully implemented and each 1890 Institutions now has a USDA Liaison Officer.

This position functions as the USDA Agricultural Liaison Officer at a designated 1890 Land Grant Institution or Tuskegee University. Under the director of the Food and Agriculture Council (FAC), the incumbent provides liaison and assistance to the assigned institution in such areas as student recruitment and counseling; academic program development; teaching and research assistance; outreach; and natural resource management of university facilities.

This position is subject to a service agreement, with a minimum assignment duration of 2 years.

Serves as liaison between assigned institution and USDA agencies to coordinate programs of mutual interest.

Provides guidance and/or teaching assistance to university staff on development of new and existing agriculture, natural resources and related curricula.

Advises and counsels students on employment opportunities and programs of USDA agencies; assists in student recruitment on behalf of the institution and USDA agencies, and in academic program development.

B. Summer Hire Programs.

The USDA offered 500 positions to students from the 1890 Institutions this past summer. The program was very successful. The students assigned to the Washington area met with the Secretary of Agriculture and had a reception on Capitol Hill. The program will be expanded in the coming year.

C. 1890 Institutions Capacity Building Program.

The program will serve as the crux of the Department's high priority initiative to advance the capacity of the 1890 institutions and Tuskegee University. It will differ from the Strengthening-Grants Program in that it will require cooperative programs with one or more USDA agencies require cooperative programs with one or more USDA agencies require cooperative programs with one or more USDA agencies in developing a proposal and in implementing and carrying out the capacity building project. Funds will be targeted to initiatives which transcend the capability of a single institution to achieve. Examples of such initiatives include:

* National Center for Increasing the Participation of Minorities in Agriculture

* National Minority Merit Scholars Program in the Food and Agricultural Sciences

* National Mentors Program for Developing Minority Youth

* National Center for Developing Minority Agribusiness Managers

This program builds on a base program of fellowships grants, challenge grants, and 1890 strengthening grants. It will encourage collaboration among 1862 institutions, private industry, and others as appropriate.

Program
Components: Program comprised of two components:

1. Teaching activities related to the following targeted needs:

   a. Curriculum design and materials development. Examples include:

   b. Faculty preparation and enhancement. Examples include:

c. Instructional delivery systems. Examples include:

d. Experiential learning.

2. Provide opportunities for undergraduate students to complete practice courses (apprenticeships, internships, etc.).

3. Research activities. Proposals must address high-priority research initiatives in those areas where there are shortages of capabilities and in which it is feasible for applicants to become centers of excellence.